CHAPTER 1

INTRODUCTION

1.1 Background of Study

Formwork is an ancillary construction, used as a mould for a structure. Into this mould, fresh concrete is placed only to harden subsequently (Mishra, Gopal, 2012).

(Mishra, Gopal, 2012) also stated that the construction of formwork takes time and involves expenditure up to 20 to 25% of the cost of the structure or even more. Design of these temporary structures is made to economic expenditure. The operation of removing the formwork is known as stripping. Stripped formwork can be reused. Reusable forms are known as panel forms and non-usable are called stationary forms.

Timber is the most common material used for formwork. The disadvantage with timber formwork is that it will warp, swell and shrink. Application of water impermeable cost to the surface of wood mitigates these defects. To ensure the quality of finished concrete structures, box form should have the following characteristics:

- ✓ Formwork should be straight to resist deflection during concreting.
- ✓ Formwork form must have the strength to support the weight or pressure and vibration during concrete compaction process.
- ✓ To be installed correctly and properly according to size and level as determined.
- ✓ The connection shapes must be closely and securely so that it does not leak to prevent loss of concrete water.
- ✓ Pieces and parts are easy to unit lifted, installed and removed.

- ✓ Order of referral units trapped by concrete poured and easily opened and not damages the concrete.

- ✓ Surface of the slab and the internal divided units should be straight and flat with no impurities. This should be used each time the box.

The development of construction technology was increase day by day. The IBS technology was introduced in construction industry. The Industrialized Building Systems (IBS) is defined as a construction process which utilized techniques, products, components, or building systems that involves with prefabricated components and on-site installation (Zawawi, 2009). The IBS formwork that includes metal/steel, aluminium and plastic gained its popularity recently due to its flexibility of application in many projects, recyclable at many phase of construction; and can be used in different types of design structure (Baharuddin, Bahardin, Zaidi, Yusof, & Lokman, 2015). This factor is giving a significance impact towards the importance of IBS formwork system applied in the Malaysian construction industry.

The Construction Industry Development Board (CIDB) Malaysia in 2017 reported that, the implementation of IBS formwork was relatively lower as compared to the other components of IBS system. The study has shown that, issues related to high initial capital investment for pre-casters in purchasing new machinery, mould, transferring a foreign technology as well as highly wages of skilled workers; were reflected to the lower application of this system. Furthermore, lack of knowledge in IBS formwork technology among the Malaysian construction industry stakeholder has given a consequence in creating an understanding, awareness and readiness to applied IBS formwork system.

The CIDB Malaysia classified the IBS component into a few system namely precast concrete framing, panel and box systems, reusable formwork systems, steel framing systems, prefabricated systems, block work system and innovation. The formwork system provides extra advantages as a sustainable formwork which can provides better speeds of construction, lower life-cycle costs, almost indestructible and reducing the additional site work (Baharuddin,2015).On the other hand, the IBS formwork is one of the intelligent components introduced to reduce the chaining of various problems which comes from construction industry.

As a sustainable element technology, IBS formwork was full of benefits in fulfil the basic goal of construction; time, resources and quality .Nevertheless, the expectation in application of IBS formwork in construction industries sounds mushrooming seen contradictive. Even the CIDB of Malaysia actively promoting the use of IBS in construction, the application of IBS by the Malaysian stakeholder was lack and relatively below the target. The stakeholders are needs to align with the paradigm shift from conventional construction process into a lean construction method .Since, there is little research related to readiness factors of using IBS formwork system in Malaysia were raised by researchers; the research is tend to focus on the critical factors and its difficulties by using this system in the Malaysian construction sector.

1.2 Problem Statement

Research study need to identify the objectives of research from the problem statement. Based on Zawawi,2009 he stated that the level of IBS usage in local construction industry is only 15% in 2003 (CIDB,2003a) while in 2006 only 10% which is less than one third of completed construction project using at least one IBS product (CIDB,2007). Based on the Roadmap mid-term review, it is clearly stated that one of the most barrier is negative perception by the consumer & the practitioner

Besides, the existence of this IBS formwork seems to be one of the problem solving in reducing the used of conventional formwork which famous of additional site work and quiet waste based on time, cost and safety (Haron, 2015). Nevertheless, production of IBS formwork with full of advantages seems not glowing enough when their application still not rapidly embracing (Nawi, 2011).

The IBS or prefabricated formwork is known as one of the best alternative in completing the construction project nowadays. The existence of this IBS formwork seems to be one of the problem solving in reducing the used of conventional formwork which was exposed to the additional site work in nature as well as to the construction waste that finally affected the time, cost and safety (Nawi, Anuar, & Lee, 2013).

In respecting to this scenario, the study on identification of critical factor and its difficulties for applying IBS formwork; will assists the Malaysian government to overcome the shortcomings. This can provides an alternative solution to enhancing the uses of IBS formwork in the Malaysian construction industry.